In the claims:

1. (Original) A dilatation balloon catheter comprising:

a balloon body for dilating stenotic lesions;

at least one optical fiber including a optical fiber distal segment externally attached on the perimeter of said balloon body;

where said at least one optical fiber can be connected to a light source and said optical fiber distal segment is capable of receiving light energy from said light source and emitting radial light energy to an adjacent tissue volume with high optical efficiency;

where said radial emitted light energy is substantially uniform along said optical fiber distal segment and the light-tissue interaction depth enables to interact with a very confined tissue volume proximal to said distal segment;

where said optical fiber distal segment has a firm structure that it enables during the inflation of said balloon body to exert pressure exactly on said confined adjacent tissue volume that interacted with said radial emitted light-energy;

where said radial emitted light energy and said exerted pressure create microscopic cracked or cut or bond-weaken segments in the stenotic tissue;

and said microscopic cracked or cut or bond-weaken segments in the stenotic tissue facilitate the dilatation of said stenotic lesions by means of said dilation balloon catheter.

2. (Original) A dilatation balloon catheter according to claim 1 where said dilatation balloon catheter can be inflated and deflated one or more times for therapy purposes, and said optical fiber distal segment is capable of remaining attached to said balloon body regardless of the inflation or deflation position of said basic balloon body.

3. (Original) A dilatation balloon catheter according to claim 1 where said at least one optical fiber is more than one optical fiber.

4. (Original) A dilatation balloon catheter according to claim 1 where said optical fiber distal segment can have any length of up to 10 cm.

5. (Original) A dilatation balloon catheter according to claim 1 where said microscopic cracked or cut or bond-weaken segments in the stenotic tissue are achieved due to said radial emitted light energy.

6. (Original) A dilatation balloon catheter according to claim 1 where said microscopic cracked or cut or bond-weaken segments in the stenotic tissue are achieved due to a combination of said radial emitted light energy and of said exerted pressure.

7. (Original) A dilatation balloon catheter according to claim 1 where said optical fiber distal segment is manufactured from a flexible and firm material ensuring enhanced endoluminal maneuvering capabilities through tortuous vessels and other stenoses or obstructions.

8. (Original) A dilatation balloon catheter according to claim 1 where the material of said balloon body is matched to the effect induced by said optical fiber distal segment in said stenotic tissue.

9. (Original) A dilatation balloon catheter according to claim 1 where the inflation rate of said balloon body is matched to the effect induced by said optical fiber distal segment in said stenotic tissue.

10. (Original) A dilatation balloon catheter according to claim 1 where said clinical endoluminal intervention can be related to any of the following group: vascular system, biliary system, urinary system or gastrointestinal system.

11. (Currently Amended) Clinical invasive intervention according to ~~claim 12~~claim 1 where said clinical endoluminal intervention is performed on a human. or on a mammalian animal.

12. (Original) An angioplasty method for dilating a stenotic lesion by means of a dilatation balloon catheter including a balloon body and at least one optical fiber including an optical fiber distal segment that is externally attached on the perimeter of said balloon body, said method including the steps of:

a first step of positioning said balloon body with said externally attached optical fiber distal segment against said stenotic lesion;

a second step of activating a light source and transferring said light energy to said optical fiber distal segment, where said optical fiber distal segment is capable to emit radial light-energy to an adjacent tissue volume with high optical efficiency;

where said radial emitted light energy is substantially uniform along said optical fiber distal segment and the light-tissue interaction depth enables to interact with a very confined tissue volume proximal to said distal segment;

a third step of inflating said balloon body with said optical fiber distal segment, where said optical fiber distal segment has a firm structure that exerts pressure exactly on said confined adjacent tissue volume that interacts with said radial emitted light-energy;

where said radial emitted light energy and said exerted pressure create microscopic cracked or cut or bond-weaken segments in the stenotic tissue;

and where said microscopic cracked or cut or bond-weaken segments in the stenotic tissue facilitate the dilatation of said stenotic lesions by means of said dilation balloon catheter.

13. (Original) A percutaneous transluminal angioplasty method according to claim 12 where externally attached light energy means are manufactured from a flexible and firm material ensuring enhanced endoluminal maneuvering capabilities through tortuous vessels and other stenoses or obstructions.

14. (Original) A percutaneous transluminal angioplasty method according to claim 12 where said clinical invasive intervention can be related to any of the following group: vascular system, biliary system, urinary system or gastrointestinal system.

15. (Original) Clinical invasive intervention according to claim 14 where said clinical endoluminal intervention is performed on a human or on a mammalian animal.